

Attorney Docket No. 03398.000004.

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: YOUNGER AHLUWALIA

Art Unit: 1794

Serial No.: 10/766,652

Examiner: Ula C. Ruddock

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REPLY BRIEF

This is a Reply Brief filed in conjunction with the Appeal to the Board of Appeals in the above-referenced application. The present Reply Brief is filed in response to the Examiner's Answer, dated August 6, 2009. The present Reply Brief is being timely filed within two (2) months of the Examiner's Answer. Accordingly, the Appellant respectfully requests that the Appeal Board consider the arguments presented hereinbelow.

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REPLY BRIEF

I. Status of Claims

The Examiner's Answer did not object to the Status set out in Appellant's Brief On Appeal. For convenience, that Status is repeated here.

The status of the claims is as follows:

- Claims 1-19 stand finally rejected and are under appeal.

II. Grounds of Rejection To Be Reviewed On Appeal

The Examiner's Answer did not object to the grounds of rejection to be reviewed as set out in Appellant's Brief On Appeal. For convenience, those grounds to be reviewed are repeated here.

1. Whether Claims 1-19 are not obvious under 35 U.S.C. §103 over United States Patent No. 5,965,257 ("Ahluwalia '257") in view of United States Patent No. 4,600,634 ("Langer") and GB 2167060 ("GB '060") or United States Patent No. 4,994,317 ("Dugan") or United States Patent No. US 6,228,497("Dombeck")?

III. Argument

A. Claims 1-19 Are Not Obvious Under 35 U.S.C. § 103(a)

1. Claim 1 The Office Failed to Articulate a Proper Rationale for Establishing a *Prima Facie* Case of Obviousness

Appellant respectfully submits that the Office has still failed to articulate a proper rationale for establishing a *prima facie* case of obviousness against Claim 1.

As previously pointed out, it is well established that the Office bears the burden of establishing a *prima facie* case of obviousness. *See* MPEP § 2142. If the

Examiner does not produce a *prima facie* case of obviousness, then the Appellant is under no obligation to submit evidence of nonobviousness. *Id.*

In *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007) (quoting, with approval, *In re Kahn*, 441 F.3d 977, 988; 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)), the Supreme Court reiterated the well-established principle that “rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” Thus, at the very least, in order to establish a *prima facie* case of obviousness, the Office must analyze the *Graham* factors and articulate reasoning with some rational underpinning to support the asserted obviousness conclusion. Merely relying on conclusory statements renders an asserted *prima facie* case of obviousness deficient.

Additionally, post *KSR*, the Federal Circuit in composite materials cases has recognized that the analysis under § 103 must include 1) examining whether the specified classes of materials proposed by the prior art comprise a large number of substances with quite different properties, and 2) determining whether the various combinations of those materials are compatible depending on how they are assembled to reach a proposed combination. See, *Sud-Chemie Inc. v. Multisorb Tech. Inc.*, 554 F.3d 1001, 1006 (Fed. Cir. 2009) (“However, in concluding that Komatsu teaches the use of compatible polymeric materials, the district court failed to acknowledge that the specified classes of materials comprise a large number of substances with quite different properties, and that various combinations of those materials can be compatible or incompatible depending on how they are assembled in layers to form the container.”).

Appellant previously submitted that the Office had failed to establish a *prima facie* case of obviousness against Claim 1 in the Office Action of November 12, 2008 (Final Office Action) because the Office failed to provide any supporting rationale as to how the composite materials disclosed in Ahluwalia '257 could be modified to include the admittedly lacking elements of Claim 1¹ while maintaining a coating with essentially the same ionic charge as the substrate it coats and that does not bleed through the substrate.

Aside from the Office's new comments on page 7 of the Examiner's Answer with regard to unexpected results, the Office has essentially reiterated, word for word, the same rejection rationale with respect to Claim 1 as recited in the Final Office Action, and also offered the following new conclusory statement:

"Furthermore, while Appellant may argue that the combination of Ahluwalia, Langer, GB '060, Dugan, and Dombeck would not result in a material as set forth in claim 1, there is nothing on the record to support this allegation."

Examiner's Answer, page 7.

Contrary to the Office's assertion, the record does support Appellant's position. Indeed, Ahluwalia '257 itself indicates that the prior art composite materials, **including those that utilize clay**, require other complex and/or expensive constituents and/or steps to achieve a coating that does not bleed through the substrate. *See* Ahluwalia '257, Col. 1, lines 12-63. Thus, a person of ordinary skill in the art, aware of that portion of Ahluwalia '257, would be deterred from including clay among the coating constituents. Nothing in the other citations contradicts the Ahluwalia '257 teaching away

¹ "Ahluwalia ['257] discloses the claimed invention except for the teaching that a metallic component is adhered to the coated substrate . . . and the specific teaching that clay is added to the coating." Final Office Action, paragraph bridging pages 2 and 3; and Examiner's Answer, page 4.

from utilizing clay in “a structural article having a coating that includes only two major constituents, while eliminating the need for viscosity modifiers, for stabilizers or for blowing,” Ahluwalia ‘257, Col. 1, lines 54-57.

Accordingly, Appellant respectfully submits that the Office has still failed to articulate any reasoning as to how the characteristics of the Ahluwalia ‘257 composite materials would still exist after modification to arrive at the Office’s proposed composite material.

In at least Appellant’s Request for Reconsideration of February 6, 2009 and Appellant’s Brief On Appeal, Appellant noted that the Office had failed to meet its burden for establishing a *prima facie* case of obviousness and requested that the Office articulate the purported supporting rationale, if any, that the Office was attempting to rely upon to indicate how the characteristics of the Ahluwalia ‘257 composite materials would also exist after the Final Office Action’s proposed modifications to the Ahluwalia ‘257 composite materials. *See* Request for Reconsideration of February 6, 2009, pages 2-4.

The sole portions of the present application’s file history where the Office responded to Appellant’s arguments are:

- (1) the above quoted statement in the Examiner’s Answer, and
- (2) a statement in the Advisory Office Action of February 18, 2009 (“First Advisory Office Action”) that “This argument is not persuasive because Ahluwalia ‘257 does not suggest that the addition of clay would result in a coating that bleeds through the substrate.”

Hence, the Office's sole rationale for establishing a *prime facie* case of obviousness relies on the presumption that features of a particular composite material will remain after any modification absent a teaching to the contrary.

Appellant respectfully submits that the Office's reliance on this presumption also demonstrates that the Office lacks any rationale to indicate how the characteristics of the Ahluwalia '257 composite materials would exist after the Final Office Action's proposed modifications. As pointed out above, the Office bears the burden of establishing a *prima facie* case of obviousness against Claim 1 and in particular must analyze the *Graham* factors and articulate reasoning with some rational underpinning to support an asserted obviousness conclusion. Here Ahluwalia '257, the other art relied upon (Langer, GB '060, Dugan and Dombeck), and Final Office Action, and Examiner's Answer are completely devoid of any teaching to support the asserted obviousness conclusion by the Office. The Office is not relieved of its burden of establishing a *prima facie* case of obviousness merely because the primary reference relied upon does not recite an explicit teaching adverse to the Office's proposed modifications.

These deficiencies in the Office's rejection are particularly concerning because the very reference that the Office relies upon and proposes modifying, Ahluwalia '257, teaches that the coating should include only two constituents, lists what those constituents may be, and does not include clay on the list even though it was mentioned as a prior art component.

Like the obviousness analysis performed by the district court in *Sud-Chemie*, which the Federal Circuit held was improper, the Office fails to acknowledge

that the specified classes of materials utilized in Ahluwalia '257 and the Office's proposed combination comprise a large number of substances with quite different properties, and thus require additional analysis for determining whether the various combinations of those materials are compatible depending on how they are assembled to reach a proposed combination. The Final Office Action, First Advisory Action, Examiner's Answer, and the file wrapper history as a whole, all completely lack any analysis in this regard.

For at least these reasons, Appellant submits that the Office did not meet its burden for establishing a *prima facie* case of obviousness against Claim 1 in view of Ahluwalia '257, Langer, GB '060, Dugan, and Dombeck, and that the Final Office Action's mere conclusory statements are insufficient. Accordingly, the rejection under 35 U.S.C § 103(a) is believed obviated, and its withdrawal is respectfully requested.

2. Claims 1 and 16
The Combinations Recited in Claims 1 and 16
Are Not Obvious In View Of the Unexpected Results

In the Final Office Action and the Examiner's Answer, the Office continues to contend that it "would have been obvious to one having ordinary skill in the art to have added Langer's aluminum sheet to one or both sides of the coated substrate of Ahluwalia, motivated by the desire to create a structural article with increased strength and durability." In the responses of February 6, 2009, March 11, 2009, and the Brief On Appeal, Appellant respectfully submitted that even if the Office's asserted *prima facie* case of obviousness were proper², it is rebutted in view of secondary considerations. *See* MPEP § 2141 V. Specifically, Appellant respectfully submitted that the cotton ball test

² As discussed above, at the very least, the Office did not establish a *prima facie* case of obviousness with respect to Claim 1.

discussed in paragraphs 49 and 50 of the present specification (“the cotton ball test”), and further elaborated upon below, clearly demonstrates that the results of the claimed combinations are unexpected.

In accordance with MPEP § 2141, the Office must consider unexpected results when determining whether a claimed combination is obvious. On page 7 of the Examiner’s Answer, the Office states:

Appellant also argues that the claims are not obvious in view of the cited references because Appellant has attempted to show unexpected results by providing results of the cotton ball test discussed in paragraphs 49 and 50 of the present specification which ‘clearly demonstrates that the results of the claimed combination are unexpected.’ However, the results of the cotton ball test refer only to the system described in the above referenced application and not to the individual claims of the application. As such the declaration does not show that the objective evidence of nonobviousness is commensurate in scope with the claims. The claims do not set forth any specific properties resulting from the cotton ball test. See MPEP § 716. In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

(Emphasis added).

In other words, the Office asserts that the required nexus between the claimed invention and the evidence of the secondary considerations does not exist, and thus the outstanding obviousness conclusion has not been properly rebutted. Appellant respectfully disagrees.

Appellant acknowledges that when the Office considers the weight of secondary considerations, such as unexpected results, the required nexus is between the claimed invention and the evidence of the secondary considerations. MPEP § 716.01(b).

MPEP § 716.01(b) states the following with regard to “nexus”:

**TO BE OF PROBATIVE VALUE, ANY SECONDARY
EVIDENCE MUST BE RELATED TO
THE CLAIMED INVENTION (NEXUS REQUIRED)**

The weight attached to evidence of secondary considerations by the examiner will depend upon its relevance to the issue of obviousness and the amount and nature of the evidence. Note the great reliance apparently placed on this type of evidence by the Supreme Court in upholding the patent in *United States v. Adams*, 383 U.S. 39, 148 USPQ 479 (1966). To be given substantial weight in the determination of obviousness or nonobviousness, evidence of secondary considerations must be relevant to the subject matter as claimed, and therefore the examiner must determine whether there is a nexus between the merits of the claimed invention and the evidence of secondary considerations. *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 305 n.42, 227 USPQ 657, 673-674 n. 42 (Fed. Cir. 1985), *cert. denied*, 475 U.S. 1017 (1986). The term “nexus” designates a factually and legally sufficient connection between the objective evidence of nonobviousness and the claimed invention so that the evidence is of probative value in the determination of nonobviousness. *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 7 USPQ2d 1222 (Fed. Cir.), *cert. denied*, 488 U.S. 956 (1988).

(Emphasis original).

Appellant respectfully submits that the required “nexus” between the claimed invention and the cotton ball test exists because paragraph 49 of the present specification explicitly states that sample #2 is a composite material of the present invention which included aluminum foil. Thus, the “nexus” is not only readily apparent, but also explicit.

Furthermore, the cotton ball test has a high probative value for determining nonobviousness because one of the three samples tested in the cotton ball test was derived from the very same primary reference, Ahluwalia ‘257 (owned by the assignee of the present application), that the Office proposes modifying to arrive at the

presently claimed invention. Moreover, those three samples show specific burn time results with regard to incorporating, each alone and in combination, the very same elements that the Office proposes incorporating into Ahluwalia '257 to arrive at the presently claimed inventions of Claims 1 and 16. Appellant again notes that the Office admits that "Ahluwalia ['257] discloses the claimed invention except for the teaching that a metallic component is adhered to the coated substrate . . . and the specific teaching that clay is added to the coating." Final Office Action, paragraph bridging pages 2 and 3; and Examiner's Answer, page 4.

Specifically, the present inventions set forth in Claims 1 and 16 are based, at least in part, on the unexpected and surprising discovery that the inclusion of a metallic component on the fire resistant fabric materials of priority application Ahluwalia '550, which modified the Ahluwalia '257 composite material to include a clay filler, surprisingly results in a composite material with superior heat insulating properties and fire resistant properties that is still flexible. *See* paragraph 14 of the present specification. The Bunsen Burner-cotton ball tests conducted by Appellant clearly demonstrate the surprising superior heat insulating and fire resistant properties of the present invention.

As discussed in paragraphs 49 and 50 of the present specification, Appellant performed a cotton ball test to determine whether, when exposed to the flame of a Bunsen Burner, a cotton ball placed on top of the composite materials of the invention and on the other side of the flame, would be protected from the flame. Three samples were tested. One of the three tested samples was derived from the very same primary reference, Ahluwalia '257 (owned by the assignee of the present application), that the Office proposes modifying to arrive at the presently claimed invention.

The three samples included in the test were:

1) the Ahluwalia '257 composite material (which does not include a clay filler) modified to have aluminum foil adhered thereto,

2) the Ahluwalia '550 composite material (which is the Ahluwalia '257 composite material modified to include a clay filler) without a metallic component, and

3) the presently claimed invention (Ahluwalia '550 composite material modified to have aluminum foil adhered thereto).

Using the above numbering for the samples, the burn time for the cotton balls placed on top of sample #1 was 1 to 5 minutes, while the time to burn for the cotton balls placed on top of sample #2 was 14 minutes. In stark contrast, however, the cotton balls placed on top of the sample #3 did not burn after 8.5 hours, which is more than 32X longer than either #1 or #2. These data clearly indicate the unexpected superior results of the invention. These results also show that the mere addition of aluminum foil or a clay filler to Ahluwalia '257, each on their own, failed to result in the significant improvements demonstrated when both are included in the manner set forth in the presently claimed invention. These tests more than adequately demonstrate the existence of surprising and unexpected results to rebut the alleged obviousness rejection.

In view of the above unexpected results, Appellant respectfully submits that the claimed combination of elements is not obvious even if the Office had articulated a proper *prima facie* case of obviousness against Claims 1 and 16.

Therefore, Appellant respectfully requests that the rejection of Claims 1 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Ahluwalia in view of Langer and GB '060 or Dugan or Dombeck be withdrawn.

3. Dependent Claims 2-15
The Office Failed to Articulate a Proper Rationale for
Establishing a *Prima Facie* Case of Obviousness

The Final Office Action alleges that the proposed combination in view of Ahluwalia '257, Langer, GB '060, Dugan, and Dombeck teaches all the limitations of dependent Claims 2-15. Appellant respectfully disagrees. For all the reasons mentioned above in Section III A(1), Appellant asserts that the Office has failed to establish a *prima facie* case of obviousness against Claims 2-15 which all depend from Claim 1 directly or indirectly.

Accordingly, Appellant respectfully requests withdrawal of the 35 U.S.C § 103(a) rejection.

4. Dependent Claims 2-15 and 17-19
The Combinations Recited in Claims 2-15 and 17-19
Are Not Obvious In View Of the Unexpected Results

The Final Office Action alleges that the proposed combination in view of Ahluwalia '257, Langer, GB '060, Dugan, and Dombeck teaches all the limitations of dependent Claims 2-15 and 17-19. Appellant respectfully disagrees. For all the reasons mentioned above in Section III A(2), Appellant asserts that any alleged *prima facie* case of obviousness is properly rebutted in view of the evidence of unexpected results presented by Appellant.

Accordingly, Appellant respectfully requests withdrawal of the 35 U.S.C § 103(a) rejection.

CONCLUSION

Appellant respectfully submits that the 35 U.S.C. § 103(a) rejections of record are deficient for at least the foregoing reasons. Accordingly, withdrawal of the rejections is respectfully requested.

Respectfully submitted,

Date: October 6, 2009

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LEXSEE 554 F.3D 1001

SUD-CHEMIE, INC., Plaintiff-Appellant, v. MULTISORB TECHNOLOGIES, INC., Defendant-Appellee.

2008-1247

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

554 F.3d 1001; 2009 U.S. App. LEXIS 1640; 89 U.S.P.Q.2D (BNA) 1768

January 30, 2009, Decided

PRIOR HISTORY: [**1]

Appeal from the United States District Court for the Western District of Kentucky in case no. 3:03-CV-29, Judge Charles R. Simpson, III.

Sud-Chemie, Inc. v. Multisorb Techs., Inc., 2007 U.S. Dist. LEXIS 66507 (W.D. Ky., Sept. 5, 2007)

DISPOSITION: VACATED and REMANDED.

COUNSEL: Kevin M. O'Brien, Baker & McKenzie LLP, of Washington, DC, argued for plaintiff-appellant. With him on the brief were Kevin J. Sullivan and Thomas A. Doyle, and James J. Dries, of Chicago, Illinois.

Michael R. McGee, McGee and Gelman, of Buffalo, New York, argued for defendant-appellee.

JUDGES: Before RADER, FRIEDMAN, and BRYSON, Circuit Judges.

OPINION BY: BRYSON**OPINION**[*1002] BRYSON, *Circuit Judge*.

Desiccant containers are frequently used to maintain a dry environment for products during storage or shipping. Some desiccants function by absorbing water vapor and undergoing a phase change into liquid form. Leakage of the liquid from the desiccant container would defeat the purpose of the desiccant and could damage

either the products that are being maintained in a dry environment or the container [*1003] in which the products are being shipped. For that reason, it is important that desiccant containers used in that manner be permeable to water vapor but impermeable to liquid water, and water, and that they have strong, leak-proof seals, so that the seals will not fail even [**2] if a substantial volume of liquid collects inside the container.

Sud-Chemie, Inc., owns *U.S. Patent No. 5,743,942* ("the '942 patent"), which is directed to a desiccant container made from a water-vapor-permeable, multilayered packaging material. The packaging material recited by the '942 patent consists of two films: a microporous film and a laminate film. The two films are heat-sealed to each other around the edges to form a closed container for the desiccant material that is placed within. Sud-Chemie manufactures commercial desiccant containers covered by the '942 patent.

According to the '942 patent, many prior art desiccant packages sought to solve the problem of water leakage from the package by creating seals from films coated with adhesives and sealed together with heat sealers. '942 patent, col. 1, ll. 61-64. In contrast, the '942 patent sought to solve the leakage problem by requiring the use of packaging films that are not coated with adhesives but that are "compatible" with each other. The '942 patent explains that when they are sealed together with a heat sealer, uncoated but compatible film materials form stronger seals than adhesive-coated films. In addition, they are less [**3] costly and can be sealed using conventional high-throughput heat-sealing

machines that cannot readily be used with adhesive-coated films. *Id.* at col. 3, ll. 16-28. Claim 1 of the '942 *patent*, which is the only independent claim, reads as follows:

A desiccant container comprising a desiccant material surrounded by a laminated, water vapor permeable desiccant packaging material, wherein said packaging material comprises an uncoated microporous film having an inner and outer surface heat sealed to an uncoated laminate film having an inner and outer surface, wherein the uncoated microporous film comprises a different composition from the uncoated laminate film, wherein wherein edges of the inner surface of the uncoated microporous film are sealed to edges of the inner surface of the uncoated laminate film, and wherein the inner surface of the uncoated microporous film and the inner surface of the uncoated laminate film are comprised of compatible polymeric materials.

Defendant Multisorb manufactures and sells TranSorb desiccant bags, which are also designed and marketed to protect cargo from moisture damage during shipment. In 2003 Sud-Chemie brought suit against Multisorb in the United [**4] States District Court for the Western District of Kentucky, alleging that Multisorb's TranSorb product line infringes the '942 *patent*. After the district court issued an order construing the disputed terms of claim 1, the parties filed cross-motions for summary judgment on the issues of infringement and validity.

The central issue with respect to validity was whether a prior art patent, *U.S. Patent No. 4,487,791* ("Komatsu"), rendered the '942 *patent* invalid for obviousness. The Komatsu patent is directed to an oxygen-absorbing package in which an oxygen-absorbing material is surrounded by a gas-permeable packaging material. The packaging material in Komatsu consists of a microporous film and a laminate film sealed together with a conventional heat-sealing machine. Komatsu, col. 1, ll. 6-8, 57-61. The district court found that the polymeric microporous and laminate films disclosed by Komatsu were identical [*1004] to those described in

the '942 *patent* and that both patents taught heat sealing the films using conventional high-speed packaging equipment. The court therefore concluded that "the Komatsu patent taught the same container as the '942 *patent*, with the exception of the absorbent material [**5] disposed between the layers." According to the district court, the '942 *patent* simply substituted a desiccant material for an oxygen-absorbing material. Citing the Supreme Court's decision in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 127 S. Ct. 1727, 167 L. Ed. 2d 705 (2007), the court held that the substitution of one absorbing material for another would have been obvious to a person of skill in the art of atmospheric packaging. The district court therefore granted summary judgment that the '942 *patent* was invalid for obviousness in view of the prior art Komatsu patent. Sud-Chemie appeals that decision to this court.

I

Sud-Chemie asserts that the district court erred in concluding that the Komatsu and '942 *patents* teach identical containers that differ only as to the absorbent substance encapsulated by the packaging materials. Specifically, Sud-Chemie contends that Komatsu fails to teach three of the limitations pertaining to the desiccant container that are recited in claim 1: (1) the use of uncoated microporous and laminated films; (2) the water-vapor-permeable character of the packaging materials; and (3) the use of "compatible" polymeric materials (as that term is defined in the specification [**6] of the '942 *patent*) on the inner surfaces of the microporous film and the laminated film. We agree with Multisorb that Komatsu teaches the first two elements. However, we conclude that the evidence before the district court does not support the court's conclusion that Komatsu discloses the use of compatible polymeric materials, and for that reason, we conclude that the court's summary judgment order must be vacated. We address each of the three disputed claim limitations in turn.

A

Claim 1 of the '942 *patent* requires that the desiccant packaging material be composed of an "uncoated microporous film . . . heat sealed to an uncoated laminate film" In its claim construction order, the district court construed the term "uncoated" "uncoated" to mean "uncoated with an adhesive." According to the '942 *patent*, uncoated compatible films can produce stronger

seals than those formed using incompatible films that are coated with adhesive. '942 *patent*, col. 7, ll. 14-16. Furthermore, the patent explains that adhesive-coated films are more expensive and that using adhesives can prevent conventional heat-sealing machines from operating at maximum efficiency. *Id.*, col. 3, ll. 19-21, 26-28.

Komatsu [**7] refers generally to microporous "films" and laminated nonwoven fabric "sheets." Moreover, Komatsu repeatedly refers to the process of adhering the films and sheets together by heat sealing, with no indication that the process contemplates the use of adhesive coatings on the films. *See* Komatsu, col. 1, ll. 29-31; col. 3, ll. 42-43; col. 4, ll. 14-15, 36-37. Sud-Chemie contends that because Komatsu does not specifically refer to the films as "uncoated," it fails to teach the purportedly critical requirement of the '942 *patent* that both the laminate and microporous films be uncoated.

Sud-Chemie draws the wrong inference from Komatsu's failure to specifically refer to the films as uncoated. As noted, Komatsu plainly teaches that containers can be made of films that are heat sealed [*1005] without the use of adhesives, and thus without coatings. Moreover, Sud-Chemie has not offered any evidence that a reference to a microporous or laminate film would be understood by one of skill in the art as contemplating a film with an adhesive coating attached. The district court was thus correct to characterize Komatsu as teaching the use of uncoated films and not to interpret Komatsu as disclosing only films [**8] coated with adhesives.

Sud-Chemie further asserts that Komatsu "includes no teaching or suggestion on how the films are prepared." In fact, Komatsu describes in fair detail how the microporous film may be prepared:

The microporous film employed in the practice of this invention may be prepared by: cold orientation of film; orientation of different substance-containing film; extraction of different substance from different substance-containing film; extraction of different substance-containing film, followed by orientating the so-treated film; laminatings of nonwoven fabrics; cross dispersing of

bundle of fibers, followed by heat-pressing the resulting material; and irradiation of film with an electron beam.

Komatsu, col. 2, ll. 21-30. ¹ Notably, neither that description nor Komatsu's description of the laminated films contains any suggestion that the process described in Komatsu requires the use of adhesive coatings. The district court therefore did not err in concluding that Komatsu discloses the use of uncoated microporous and laminated films.

1 The '942 *patent* contains a virtually identical description of how to produce microporous films:

The uncoated microporous or nonwoven film may [**9] be prepared by any conventional film forming process including cold orientation of the film, orientation of different substance-containing films, extraction of different substances from different substance-containing films, extraction of different substance-containing film followed by orientation of the treated film, cross-dispersing of a bundle of fibers followed by heat-pressing the resulting film and any other conventional procedures utilized for the formation of a microporous film.

'942 *patent*, col. 5, ll. 16-24.

B

Claim 1 also requires that the desiccant container be composed of "water vapor permeable" packaging material. The district court did not specifically address that requirement of the '942 *patent*. [**10] Sud-Chemie contends that there is a disputed issue of fact as to whether Komatsu teaches the use of water-vapor-permeable packaging materials. However, Komatsu describes the packaging films as permeable to air. Komatsu, col. 2, ll. 39-41, 50-52. As Multisorb's expert represented in his affidavit (without any expert rebuttal from Sud-Chemie), air invariably includes water vapor. Thus, by disclosing air-permeable films, Komatsu

necessarily discloses films that are water-vapor-permeable.

Based on Komatsu's references to the packaging materials as "waterproof" and "water impermeable," Sud-Chemie contends that Komatsu does not disclose--and in fact teaches away from--a water-vapor-permeable packaging material. That argument is unpersuasive, however, because it erroneously equates impermeability to water with impermeability to water vapor. A material can be both permeable to water vapor and impermeable to liquid water, as the specification of the '942 patent makes clear. See '942 patent, col. 1, ll. 37-42. Although Komatsu refers to "water" without specifying its state of matter, it is clear from context that Komatsu's reference to [*1006] "water" was to liquid water, as opposed to water in its gaseous [**11] (water vapor) or solid (ice) states. Thus, Komatsu explains that because the packaging films are "water impermeable," the container "can be packed with liquid or semi-liquid foodstuffs." Komatsu, col. 3, ll. 60-62. From its specification, it is therefore clear that Komatsu teaches materials that are impermeable to liquid water, but not to water vapor. The '942 patent similarly describes the desiccant container as "absorbing water vapor without releasing water from the container" '942 patent, col. 3, line 67, through col. 4, line 1. Komatsu's reference to "waterproof" packaging materials therefore is not inconsistent with its disclosure of water-vapor-permeable materials.

Even if Komatsu did not disclose water-vapor-permeable films, it would have been obvious to a person of skill in the art to create a desiccant container with packaging materials that are permeable to water vapor. The '942 patent acknowledges that desiccant containers that absorb water vapor were well known in the art at the time of the invention. '942 patent, col. 1, ll. 12-13. Because the containers for a desiccant must necessarily be permeable to water vapor, it would have been obvious at the time of the invention [**12] to design a desiccant container using water-vapor-permeable packaging materials.

C

Finally, claim 1 of the '942 patent requires that the inner surfaces of the microporous and laminate films be "comprised of compatible polymeric materials." The district court concluded that Komatsu teaches the use of compatible films because "[t]he Komatsu patent suggests

the employment of the same materials claimed by the '942 patent to be 'compatible polymeric materials.'" It is true that Komatsu discloses the same general classes of materials that are identified in the '942 patent. Thus, both patents state that the microporous and laminate films can be made from polyethylene, polypropylene, and other polyolefinic materials. See Komatsu, col. 2, ll. 19-21; col. 3, ll. 12-15; '942 patent, col. 5, ll. 12-15, 47-50. However, in concluding that Komatsu teaches the use of compatible polymeric materials, the district court failed to acknowledge that the specified classes of materials comprise a large number of substances with quite different properties, and that various combinations of those materials can be compatible or incompatible depending on how they are assembled in layers to form the container.

The [**13] specification of the '942 patent expressly defines the term "compatible." It states:

"Compatible" means that the materials mix on a molecular scale and will crystallize homogeneously. Thus, while such layers may not have precisely the same softening point, they should have softening points which are consistent, so that the materials will mix on a molecular level.

'942 patent, col. 6, ll. 6-10. Thus, "compatible" materials have similar melting or softening temperatures, while incompatible materials have dissimilar softening points. The district court reasoned that "[t]he Komatsu patent does not identify the inner surfaces of the films as comprised of compatible polymeric materials, but that does not mean[] that they are not." However, the Komatsu specification does identify the relative softening points of the various polymeric films that constitute the package material, and an analysis of those softening points indicates that Komatsu teaches the use of incompatible materials for the inner surfaces of the containers, whereas the '942 patent requires the use of compatible materials for those surfaces.

[*1007] The container disclosed in Komatsu comprises three layers: a single-layered microporous [**14] film and a two-layered laminate film. The three layers are heat-sealed to each other so as to create a closed container for the oxygen-absorbent material. The preferred embodiment of the desiccant container in the

'942 patent also contains a single-layered microporous film sealed to a two-layered laminate film.² Thus, the packages disclosed by the Komatsu and '942 patents share a three-layered structure in which the inner layer of the laminate film faces and seals to the inner surface of the microporous film. Additionally, both patents provide that the outer layer of the laminate film should be incompatible with its inner layer. The '942 patent states that the outer surface of the laminate film "should be manufactured from incompatible materials . . . with a higher softening point than the inner surface of the laminate film material," '942 patent, col. 6, ll. 15-19, while Komatsu similarly states that the outer surface of the laminate film should have a higher softening point than its inner surface, Komatsu, col. 3, ll. 28-29.

2 The specification of the '942 patent provides that the microporous film can consist of either a single layer or a laminate of two or more microporous film layers. [**15] '942 patent, col. 4, ll. 55-58; col. 5, ll. 9-12. As noted, however, the specification makes clear that the preferred embodiment of the desiccant package contains a single-layered microporous film. Moreover, in briefing and at oral argument the parties seemed to assume that the container claimed in the '942 patent has a total of three layers: a single-layered microporous film and a two-layered laminate film. In any event, the discussion below, which focuses on whether the inner surface of the microporous film is compatible with the inner laminate layer, applies with equal force to an alternative embodiment of the container having four or more layers. The difference between the containers described in the two patents would be even greater if the three-layered Komatsu container were compared to a four-layered embodiment of the '942 container. The possibility that the microporous film can have more than one layer in the '942 patent therefore does not alter our conclusion that the district court erred in finding that the Komatsu and '942 patents teach identical containers.

Despite these similarities, the containers disclosed in Komatsu and in the '942 patent differ in a key respect. [**16] Claim 1 of the '942 patent requires that the inner surface of the laminate film be compatible with the inner surface of the microporous film--that is, the softening points of those two layers must be consistent. In contrast,

Komatsu teaches that the microporous film and the inner laminate films should have quite different softening points; Komatsu explains that the softening point of the microporous film should preferably be at least 20 [degrees] C higher than that of the inner laminate film. Komatsu, col. 3, ll. 16-19. Thus, Komatsu teaches the use of incompatible films precisely where the '942 patent requires the films to be compatible.³ That difference is important, according to the disclosure of the '942 patent, because the '942 specification asserts that uncoated films with similar softening points will mix on a molecular level to form bonds that are significantly stronger than the bonds formed using incompatible adhesive-coated films. See '942 patent, col. 6, ll. 1-12.

3 The container disclosed in Komatsu differs from that described in the '942 patent in another respect. The specification of the '942 patent provides that the outer laminate layer should preferably [**17] be "formed from materials which are incompatible with the microporous layer, such as materials having a higher melting or softening point." '942 patent, col. 5, ll. 63-67. In contrast, Komatsu permits the outer laminate layer to be compatible with the microporous film layer. Komatsu, col. 3, ll. 24-25.

Multisorb argues that Komatsu must be understood to teach the use of compatible [*1008] materials on the container's inner surfaces because the two patents disclose the same scheme of relative softening points. To support that assertion, Multisorb points to language in the '942 patent stating that the softening temperature of the inner surface of the laminate film should be "lower than or equal to the softening temperature of the inner surface of the uncoated microporous film." '942 patent, col. 5, ll. 54-55. Based on that language, Multisorb argues that both Komatsu and the '942 patent require that the inner surface of the laminate film have the lowest softening point and that the outer surface of the laminate film have the highest softening point of the three layers. However, Multisorb ignores the fact that while the '942 patent requires the inner surfaces of the laminate and microporous films [**18] to have similar softening points, Komatsu requires the films to have dissimilar softening points. Komatsu thus does not teach the use of a microporous film that is compatible with the inner surface of the laminate film. The teaching of both patents with regard to the relative softening temperatures among the temperatures among the various surfaces does not

obviate that fundamental difference.

It is therefore evident that even though the patents disclose the same classes of polymeric materials used to form the packaging material, the containers described in Komatsu and in the '942 patent are different in a way that the '942 patent treats as important to the invention. In essence, the Komatsu container is formed by heat-sealing a microporous layer with a *high* softening point to an inner laminate layer with a low softening temperature. In contrast, the '942 container is formed by sealing a microporous layer with a *low* softening point to an inner laminate layer that also has a low softening temperature. The district court looked only to the classes of materials described in the patents and did not examine the softening points of the materials. It therefore failed to recognize that Komatsu [**19] discloses the use of incompatible materials where the '942 patent requires compatible materials, and it therefore incorrectly concluded that Komatsu teaches the same container as that claimed in the '942 patent.

II

Sud-Chemie contends that secondary considerations, including unexpected results, copying, and commercial success indicate that the invention of the '942 patent would not have been obvious to a person of skill in the art. The district court did not explicitly address any of the secondary consideration evidence, other than to state that the '942 patent did not employ elements that worked together in an unexpected manner. As we have repeatedly emphasized, evidence relating to secondary considerations "constitutes independent evidence of nonobviousness" and can be quite instructive in the obviousness inquiry. *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008). The district court should therefore attend carefully to any evidence of these secondary considerations of nonobviousness on remand. See *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 667 (Fed. Cir. 2000) [**20] (district court erred in failing to consider or discuss evidence of secondary considerations).

Sud-Chemie focuses in particular on the evidence of unexpected results. In that regard, Sud-Chemie argues that a person of skill in the art would not have expected uncoated laminate and microporous films to form stronger bonds than adhesive-coated films. In response to that argument, Multisorb contends that the '942 patent's mere assertion that "[i]t has been surprisingly discovered

that strong, laminated desiccant packaging materials can [*1009] be produced from uncoated microporous or nonwoven films" is insufficient to establish an unexpected result. See '942 patent, col. 4, line 67, through col. 5, line 3.

Multisorb is correct that conclusory statements in a patent's specification cannot constitute evidence of unexpected results in the absence of factual support. See *In re Soni*, 54 F.3d 746, 750 (Fed. Cir. 1995). However, the '942 patent provides evidence pertaining to the allegedly unexpected advantages of uncoated over coated films beyond its mere declaration that the results were surprising. Examples 1 and 2 of the '942 patent describe embodiments of the desiccant container in which uncoated [**21] but compatible laminate and microporous films formed seals with an average strength of more than nine pounds per square inch. In contrast, Example 3 shows that coated but incompatible films produced weaker bonds with a seal strength of only 2.77 pounds per square inch. The specification therefore contains specific evidence pertinent to Sud-Chemie's contention that the use of uncoated films yields advantages over more conventional combinations such as the incompatible surfaces disclosed in the Komatsu patent. See *Soni*, 54 F.3d at 750 (specification contained more than a merely conclusory assertion of unexpected results because it also provided data demonstrating improved properties). The district court should consider that evidence, as well as any contrary evidence offered by Multisorb, as it pertains to the obviousness inquiry. Of course, evidence of unexpected results and other secondary considerations will not necessarily overcome a strong prima facie showing of obviousness, see *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1372 (Fed. Cir. 2007), and we make no judgment as to the probative value of Sud-Chemie's evidence regarding the asserted secondary considerations beyond emphasizing [**22] that the district court should take such evidence into account when conducting its obviousness analysis.

III

The '942 patent contains one independent claim and 11 dependent claims. The district court's summary judgment opinion only addressed claim 1, the '942 patent's sole independent claim. Multisorb argues that the patent's dependent claims are also invalid as obvious, and Sud-Chemie challenges that assertion in its reply brief. Because Sud-Chemie did not address the validity of the

dependent claims in its summary judgment motions below or in its opening brief on appeal, we will not consider its argument that the patent's dependent claims are valid regardless of the disposition of claim 1.

In summary, we hold that the district court erred in certain respects in the course of ruling, on summary judgment, that the '942 *patent* was invalid due to obviousness. While, as indicated above, we agree with much of the district court's treatment of the differences between claim 1 of the '942 *patent* and the prior art Komatsu patent, we disagree with the court's analysis in two important respects: (1) with regard to its conclusion that Komatsu teaches using the same materials on the container's inner [**23] surfaces as those claimed in the

'942 *patent*; and (2) with regard to its treatment of the evidence set forth in the '942 specification that the use of compatible materials on the container's inner surfaces produces results that are significantly better than the conventional sealing methods. Because our resolution of those issues may affect the trial court's ultimate decision whether summary judgment of obviousness is appropriate in this case, we remand for further proceedings consistent with this opinion.

[*1010] Each party shall bear its own costs for this appeal.

VACATED and REMANDED.